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PARONYCHIA ARGYROCOMA AND ITS NEW ENGLAND REPRESENTATIVE.

M. L. FERNALD.

ONE of the plants most familiar to all botanists who explore the White Mountains is the closely matted silvery-white perennial which is called in our floras *Paronychia argyrocoma*. In certain sections, as in Crawford Notch and on some of the mountains of adjacent Maine, the plant abounds on slides and even on exposed ledges and steep embankments seemingly to the exclusion of other vegetation. Notwithstanding its profusion in some districts, the plant seems to have been missed by Menasseh Cutler, William Dandridge Peck, Jacob Bigelow, and other New England botanists in their explorations of the White Mountains; and its first mention is apparently that of William Oakes who wrote:

"This beautiful plant was probably first collected in the Notch of the White Mountains, by Drs. Chapman and Alexander, in the summer of 1843. In the same year, I found it in the gravel of many of the recent slides of the Notch, and Mr. Tuckerman has since found it in unmoved soil on a flat rocky knoll, near the summit of Mount Crawford, several miles distant from the Notch. It has not been found elsewhere north of Virginia."¹

Gradually the known stations in New England for *Paronychia* have increased, and we are now acquainted with it from the mountains of Oxford County, Maine, west through the Crawford Notch region to Mount Clinton, and south to Mount Chocorua. In June, 1884, a singularly isolated station for the plant was found by Dr. Castelhun

¹ Oakes in Hovey's Mag. xiii. 217 (1847).

by the Merrimac River near Newburyport, Massachusetts, indicating that the plant has possibly washed down from some unverified station at the headwaters of the Merrimac.

Outside this very restricted area *Paronychia* is unknown in the Northern States. Since its discovery in Crawford Notch in 1843, it has, however, been supposed to be identical with the plant of the South described by Michaux as *Anychia argyrocoma*, "in rupibus montium superioris Carolinae,"¹ and afterward taken up by Nuttall as *Paronychia argyrocoma* and stated to grow "on rocks, in the mountains of upper Carolina, and on the banks of French Broad river, in Tennessee, near the thermal springs."² Subsequently the plant of the South has been found at various mountain-stations of North Carolina and Tennessee, locally south in the mountains of Georgia, and north to the Peaks of Otter in western Virginia.

In the region between the Blue Ridge of Virginia and the White Mountains of New Hampshire *Paronychia argyrocoma* is unknown (save at the small isolated station near Newburyport); yet, as already implied, the plant of the South is as characteristic of many dry summits and slopes at the southern extremity of the Appalachian system as is its northern representative in the White Mountains. North of the White Mountains the plant is quite unknown, nor does it occur in the polar regions. In fact, the genus *Paronychia* does not belong to the arctic flora which we find so generally represented on the exposed slopes of the White Mountains; instead, it is a genus confined primarily to the warmer temperate regions, in North America thirteen species occurring south of latitude 35°, and only one as far north as New England.

This very evident affinity of a typical plant of the naked slopes of the White Mountains with a distinctly southern flora is, so far as known to the writer, quite without parallel. In many cases typical White Mountain plants are also known at the highest altitudes in the Southern States, as for instance *Arenaria groenlandica*, *Lycopodium Selago*, *Potentilla tridentata*, and *Pyrus americana* above 6000 feet on Roan Mountain, North Carolina; but in northern New England and adjacent Canada these plants are often as abundant at sea-level as at high altitudes, and in their broad range they occur extensively in polar

¹ Michx., Fl. i. 114 (1803).

² Nutt., Gen. i. 160 (1818).

regions. Another typical plant of the White Mountains and of some exposed ridges in central and western Maine, *Geum Peckii*, has by some botanists been taken for an extreme form of the very local *G. radiatum* of the highest summits of North Carolina and Tennessee, and though the White Mountain plant is undoubtedly nearly related to the Carolinian species, both it and *G. radiatum* are more closely allied to certain polar species (of Alaska and Siberia) than to other American plants.

This digression from the discussion of *Paronychia argyrocoma* itself is sufficient to show, as already stated, that the occurrence over a considerable area of the granitic mountains of New England of this representative of a characteristic southern genus is unique; and one is naturally led to ask whether, indeed, the plants of the South and the North are identical. Superficially they are very similar; yet in examining a large series of specimens one is struck with the fact that in the northern plant most if not all the ascending branches bear inflorescences, while in the southern plant many of the branches are merely leafy and sterile. In the southern plant, too, the leaves are flat and permanently covered with grayish silky hairs; in the northern the leaves are inclined to be involute at the margin and glabrate, though in the Newburyport specimen the pubescence is somewhat persistent. In the southern plant the inflorescence is more inclined to be glomerulate than in the northern, though occasional southern specimens show the looser cymes which are characteristic in the North. The only other character in which a distinction has been found is likewise an inconstant one; yet in a series of specimens there is a very apparent tendency in the northern plant to have a slightly shorter calyx than the southern, and the subulate awns nearly or quite glabrous; while in the longer calyx of the southern plant the awns are flattish and usually hairy.

It is apparent, then, that the two plants which have been passing as *Paronychia argyrocoma* are not strictly identical. Their distinctive characters are, however, somewhat inconstant, and only by its narrower glabrate leaves can the northern plant be clearly separated from the southern. In view of this character of the northern plant and the other tendencies which are found in most of the material it seems desirable to distinguish it as

PARONYCHIA ARGYROCOMA (Michx.) Nutt., var. **albimontana**, var. nov. Dense caespitosa; ramis plerumque floriferis; foliis glabratiss,

margine involutis; cymis saepe laxis; calycibus 3.5–4 mm. longis, sepalis apice aristato-mucronatis, aristis subulatis glabrescentibus.—MAINE, clefts of rock, summit of White Cap Mt., Rumford, 1874 (*Cora H. Clarke*), August 1, 1889 (*J. C. Parlin*); mountain-top, Andover, 1902 (*Mrs. E. Schneider*); summit, Caribou Mt., Mason, 1898 (*L. A. Lee*): NEW HAMPSHIRE, slides, Mt. Clinton—TYPE (*E. Tuckerman*); Crawford Notch, 1843 (*Dr. Chapman, Wm. Oakes*), July 20, 1865 (*Wm. Boott*), July 7, 1878 (*E. & C. E. Faxon*); open summit and slides, Mt. Willard, July, 1889 (*M. L. Fernald*), July 4, 1889 (*E. & C. E. Faxon*), July 10, 1894 (*E. F. Williams*); Willey Slide, July 3, 1898 (*J. M. Greenman*); Willey House, July, 1871 (*F. Lamson-Scribner*), September 8, 1893 (*E. & C. E. Faxon*); crevices of rocks on mountain slides, North Conway, 1865 (*F. J. Bumstead*); crevices of rock, summit, Mt. Chocorua, July, 1894 (*B. L. Robinson*): MASSACHUSETTS, by Merrimac River, near Newburyport, June, 1884 (*Dr. Castelhun*).

GRAY HERBARIUM.

NEW SPECIES, ETC., ISSUED IN THE PHYCOTHECA BOREALI-AMERICANA.

F. S. COLLINS.

THE first fascicle of the *Phycotheca Boreali-Americana*, by Collins, Holden & Setchell, was issued in February, 1895. Between that date and the present time the writer has distributed in that work a number of new species, varieties, and forms; in some cases the MS. name was given in the label, with an indication of where the description would be published; in other cases a regular description was printed in the label. Several of these descriptions have since appeared elsewhere in papers or notes, but in most cases the new species or variety has not been published elsewhere. While no rules as to the nomenclature of thallophytes were adopted at the recent Vienna Congress, it is probable that when action is taken in regard to such plants, the rules governing the higher plants will be adopted, unless special reason appear for variation; and as the issuing of a new flowering plant in a set of exsiccatae, with or without description, is not now a valid publication, the position of an alga so issued is certainly precarious. To prevent possible future complications, the descriptions in question are here

reprinted; if the rule for higher plants should be extended to the lower, this article would be the original reference. As far as known, there has been as yet no subsequent publication under another name of any plant here included. The description is copied exactly from the label, any comment or addition that may seem necessary being given in a foot-note; the only change has been in the case of a few of the earlier publications, where varietal and formal names have been changed to conform to the rule of agreeing in gender with the name of the genus. The Arabic numeral preceding a name sufficiently indicates the fascicle, all with such numbers having been issued 50 numbers to a fascicle, from Fasc. I to Fasc. XXVI; a Roman numeral indicates the series in larger size, 25 numbers to a fascicle, Fasc. A to Fasc. D.

1160. **Oscillatoria salinarum**, n. sp. Trichomes somewhat flexuous, sometimes coiled in a regular circle, very torulose; extremity attenuate, slightly curved, obtuse. Articulations nearly or quite as long as broad, diam. .004 mm. or slightly less; calyptra wanting. Ditches of salt works, Salinas Bay, near Guánica, Porto Rico, June 29, 1903. *M. A. Howe*.

707. **Schizothrix Simmonsiæ**, n. sp. Forming a brownish tufted coating on various algae, tufts one or two centimeters long, mass showing reddish brown when moistened, pinkish under the microscope. Trichomes pale green, .003–.006 mm., articulations one-third to one-fifth the diameter, much constricted, sometimes irregularly swollen and distorted, as if doubling up in sheath. Sheath delicate but distinct, containing mostly only a single trichome, but often with a few at the base. Near *S. tinctoria* (Ag.) Gomont, but differs by the larger diameter of trichome, relatively shorter cells, and fewness of trichomes in sheath. Moreover it grows attached to undoubtedly marine algae, while *S. tinctoria* is strictly fresh water. On algae in high rock pool, Easton's Point, Newport, Rhode Island, Dec., 1897. *Mrs. W. C. Simmons*.

1168. **CALOTHRIX CRUSTACEA** Thuret forma **prolifera** (Flah.), n. comb. *C. prolifera* Flahault in Bornet & Flahault, Revision des Nost. Het., part 1, p. 361, 1886. The branches occasionally issue from below a heterocyst, as described for *C. prolifera*, but much the greater part of the filaments are simple, and agree with *C. crustacea*. Among other algae, on boards wet with salt water, Alameda, California, Jan., 1904. *N. L. Gardner*.

1263. **SPIROGYRA PORTICALIS** (Müll.) Cleve forma **minor**, n. f. Filaments about .042 mm. diam.; spores seldom over .035 mm. diam. Among other (sterile) Spirogyras, Brookfield, Connecticut, May 8, 1892. *Isaac Holden*.

1265. **TETRASPORA GELATINOSA** Kütz. forma **uniformis**, n. f. Forming rounded gelatinous masses, not over 3 cm. diam. Cells quite uniformly .006–.008 mm. diam., not with large and small cells

intermixed, as in the type. Floating in a water trough, Berkeley, California, March 4, 1905. *N. L. Gardner.*

1267. *ENTEROMORPHA MICROCOCCA* Kütz. forma **bullosa**, n. f. Habit exactly like *E. intestinalis* f. *bullosa* Hauck, Phyk. Univ., No. 519, but structure of *E. micrococca*. In fresh water creek emptying into ocean, but water never other than fresh, San Leandro, Alameda County, California, June 24, 1902. *W. J. V. Osterhout & N. L. Gardner.*

1185. **Prasiola Gardneri**, n. sp. Fronds light green, floating, of irregular form, membrane very delicate, about .006 mm. thick, cells roundish, .003–.004 mm. diam., closely set, in longitudinal and transverse series. As this plant has been found only floating, nothing is known of the normal form or mode of attachment. The cells being uniformly placed, without the “passage ways” characteristic of *Prasiola*, the plant might with some reason be placed in *Monostroma*; and when the attached frond is found, it may have characters requiring the transfer. In the meantime, the general appearance seems to justify its present position. Floating in a pool of very salt water, Alameda, California, Sept. 16, 1903. *W. J. V. Osterhout & N. L. Gardner.*¹

664. **Chaetomorpha Californica**, n. sp. Filaments attached, erect, up to 2 dm. long, of uniform diameter throughout, not contracted at the nodes; diameter .02–.04 mm., cells once to twice as long as broad, rarely three or four times as long; basal cell usually colorless, slightly broadening below into a colorless disk of attachment. In view of the large number of described species of *Chaetomorpha*, many known only from the descriptions, it may seem rash to add one more; but the plant now in question is much more slender than any other known attached erect species; an examination of a large suite of specimens shows that while a considerable range of size can be seen in the same tuft, in no case does the diameter exceed .04 mm., while the average is .03 mm., about half the size of the smallest heretofore known. Growing on sand, etc., in shallow tide pools near high water mark, La Jolla, San Diego County, California, May, 1898. *Mrs. E. Snyder.*

978. *CLADOPHORA FLEXUOSA* (Griff.) Harv. forma **Floridana**, n. f. More slender than the New England form represented by Farlow, Anderson & Eaton, No. 206, and with more virgate, less divided branches; somewhat resembling *C. Bertolonii* var. *hamosa* Ard. of the Mediterranean. On rocks, Key West, Florida, March, 1897. *Mrs. G. A. Hall.*²

¹ Subsequent study of this plant by Mr. Gardner indicates that its affinities may be with the *Cyanophyceae* rather than with the *Chlorophyceae*.

² I am indebted to Dr. E. Bornet for calling my attention to the resemblance between this plant and *C. polyacantha* Montagne, Ann. Sci. Nat., Series 3, Bot., Vol. XIV, p. 283, from Guiana, and for a fragment of an authentic specimen; the numerous slender, pine-like, largely opposite ramuli are characteristic of both, and it now seems safe to refer the Florida plant to Montagne's species.

1193. *CLADOPHORA CRISPATA* (Roth) Kütz. forma **subsimplex**, n. f. A slender, sparingly branched form, possibly agreeing with some of the numerous forms and varieties described under this species, but in the absence of type specimens, this cannot be determined. The form name here given will serve until proper comparisons can be made, if ever. a. In dense masses, floating in a shallow spring, somewhat shaded by rocks, Berkeley, California, Feb. 22, 1903. b. Attached to stones and clay in a small waterfall, San Leandro, California, Nov. 3, 1902. *N. L. Gardner*.

1194. *CLADOPHORA FRACTA* (Fl. Dan.) Kütz. forma **reflexa**, n. f. Main branches stout, flexuous; branches of higher orders patent or reflexed, often in secund series. Forming dense intricate masses in a water trough fed by a spring, North Berkeley, California, Sept. 1, 1902. *N. L. Gardner*. The remarks under 1193 will apply to this form also; the name is probably only provisional.

1079. *ECTOCARPUS CONFEROIDES* (Roth) Le Jolis forma **Halliae** (J. Ag.), n. comb. *Xanthosiphonia Halliae* J. G. Agardh, *Analecta Algologica*, Cont. I, p. 113, 1894. Branching like var. *typica* Kuckuck; sporangia up to .4 mm. long, .03-.04 wide, widest near base, tapering evenly to tip, which is often of only a single series of cells, but does not end in a hair. On shells, etc., St. Augustine, Florida, April, 1897. *Mrs. G. A. Hall*.

670. *ECTOCARPUS CONFEROIDES* (Roth) Le Jolis forma **irregularis**, n. f. Frond up to 15 cm. high, filaments slightly twisted below, free above; cells in main filaments .045 mm. diam., in branches about half this size; cells in main filament 1-3 diam., in lesser branches up to 8 diam., slightly constricted at nodes, branches rather erect. Plurilocular sporangia varying much in size and shape, .05-.15 mm. long by .02-.035 broad, large and small together; sometimes cylindrical, oftener largest at the base, diminishing in diameter near the middle; the tip not pointed; usually curved. In tide pool, Spectacle Island, Penobscot Bay, Maine, July, 1894. *F. S. Collins*.

738. ***Strepsithalia investiens***, n. sp. Creeping filaments .005-.008 mm. diam., cells once or twice, occasionally up to four times as long as broad, swollen or cylindrical, irregularly branching, branches often arched and bearing on the outer side short, simple or branching filaments, about .006 mm. diam., cells one to two diameters. Unilocular sporangia ovoid, about .015 × .02 mm., sessile or on a short cell on main filaments and branches, empty sporangia persistent after emission of spores. Plurilocular sporangia cylindrical, .008-.01 × .025-.04 mm., mostly uniseriate, on same plants as the unilocular sporangia. Hairs few, of basal growth, about .008 mm. diam. Chromatophors small disks, several in a cell. This plant much resembles *S. curvata* Sauvageau, which occurs on the same host in Europe, but

is smaller in all its dimensions, both of filaments and sporangia, with fewer hairs, little investing gelatine, less regular erect filaments, and with plurilocular sporangia persistent for some time after emptying. Moreover it shows as a uniform coating on the host plant, rather than as Elachista-like tufts. In fronds of *Helminthocladia purpurea* (Harv.) J. Ag., San Pedro, California, July, 1899. Mrs. H. D. Johnston.

1038. *HECATONEMA MACULANS* (Collins) Sauv. forma **solutum**, n. f. Basal layer an open network, otherwise like the type, which grows in the same locality on *Rhodymenia palmata* (L.) Grev. On *Castagnea virescens* (Carm.) Thuret and *Asperococcus echinatus* (Mert.) Grev., Spectacle Island, Penobscot Bay, Maine, July, 1898. F. S. Collins.

1084. *LAMINARIA AGARDHII* Kjellm. forma **zostericola**, n. f. Very delicate form, growing on floating *Zostera marina* L., Newport Harbor, Rhode Island, April, 1899. Mrs. W. C. Simmons.

LXXXIII. *LAMINARIA AGARDHII* Kjellm. forma **angustissima**, n. f. Fronds extremely narrow in proportion to the length; stipe 5 to 25 cm. long; lamina up to 3 meters long, 6 to 25 mm. wide. The substance is firmer than in other forms of the species, and there are no lines of bullae. The margin is even, not at all undulate, and the width is nearly the same in all but the base, and in young plants the tip. The dimensions given include the largest fruiting fronds observed; a width of more than 15 mm. is unusual; and fronds 12 mm. wide and 250 cm. long are common. Forming a very dense fringe just above and below low water mark, on rocks exposed to the full force of the waves, Bailey's Island, Casco Bay, Maine, July 18, 1903. F. S. Collins.¹

834. ***Dilophus flabellatus*** n. sp. Frond reaching a length of 3 dm., dichotomous, in older plants sometimes with an apparent flexuous rachis and alternate branches, 3–5 mm. wide at base, broadening above to a width of 1–2 cm., all the divisions broadening upwards, terminal segments rounded; base stupose for a short distance. Young frond consisting of a single layer of large squarish cells, with a single layer of small cortical cells, the latter arranged in longitudinal series, and once to twice as long as broad; in older plants the margin is thickened and has two layers of internal cells, often with two layers of cortical cells; walls of internal cells punctate. Oogonia, antheridia and tetraspores on separate individuals, at first occupying the middle part of the segments, leaving the margin free; ultimately often covering the whole width; oogonia scattered more or less densely, but not usually in contact; antheridia in oval or oblong patches; tetraspores in similar patches, sometimes becoming confluent.

In young plants the branching is densely dichotomous with a rounded outline to the frond, but some of the segments develop more

¹ This is the *Laminaria* mentioned by the writer in Bull. Torrey Bot. Club, Vol. VII, p. 118, with the suggestion that it might be *L. longipes* Bory.

rapidly than others, so that as the plant grows older it assumes more of the character of a flexuous rachis with alternate branches. The width of the segments varies much, some dense-growing plants 15 cm. high having not over 3 mm., while other plants reach 2 cm., the widest part being in the best developed segments about three quarters of the distance from the base. In all cases the segments widen upwards, even to the terminal ones.

The older fronds with broad and somewhat sparingly divided segments resemble *Dictyota Binghamiana*, J. Ag. but the latter does not have the closely dichotomous branching and flabellate outline found in younger plants of *Dilophus flabellatus*. *Dictyota Binghamiana*, moreover, is described as having more or less frequent acute, incurved, marginal teeth, which are absent in the present species. *Dictyota liturata* J. Ag. and *Dictyota Pappeana* Kütz., as figured in Kutzing, Tab. Phyc., Vol. IX, Pl. 38, resemble in habit two extreme forms of this species, but both of them, as well as *Dictyota Binghamiana*, appear to be true *Dictyotas*, the internal layer never having more than one series of cells. Young plants of *Dilophus flabellatus* have the same structure, but as the plant becomes older, the margin thickens, the large cells dividing by partitions parallel to the surface of the frond, for a greater or less distance from the margin, and at the same time the cortical layer often divides in the same manner. In the specimens examined this structure has seemed commonest in the antheridial plants, but this may be merely accidental.

It is by no means impossible that this species may have passed under the name of *Dictyota Binghamiana* or of *Dictyota Kunthii*, with which *Dictyota Binghamiana* was formerly identified. Older plants of *Dilophus flabellatus* resemble the other species very much in habit, and the *Dilophus* structure is to be seen only by careful sectioning. It is less developed than in other *Dilophus* species, and our plant is in some sense a link between the two genera. Its place would be in the section *Marginatae* with *Dilophus marginatus* J. Ag., which also has the greater part of the frond of a single series of interior cells, but whose frond, however, is not stupose, but is attached by a growth of rhizoids. On boulders near low water mark, La Jolla, California, October, 1899 and 1900. *Mrs. E. Snyder*.

1133. *FUCUS VESICULOSUS* L. forma *limicola*, n. f. A very slender form, light yellowish brown when growing, seldom having vesicles, and seldom reaching a length of two decimeters. The com-

mon form of muddy shores in southern New England. Among *Spartina*, etc., on mud flats near high water mark, Mattapoisett, Massachusetts, Sept. 14, 1902. *F. S. Collins*.

833. *SARGASSUM BACCIFERUM* (Turn.) J. Ag. forma **angustum**, n. f. Found in company with the form distributed as No. 832b, but quite distinct in habit, slenderer in all the parts. The two forms did not seem to be connected by any intermediate forms. In floating masses, lat. 25.58,¹ N., long. 73.39, W., June 1900, *Stmr. Admiral Sampson*. *Mrs. C. E. Pease & Miss E. Butler*.

1087. *Batrachospermum macrosporum* (Wood) Collins, n. comb. *Chantransia macrospora* Wood, *F. W. Algae of the U. S.*, p. 216, Pl. XIX, fig. 3, 1872; Wolle, *F. W. Algae of the U. S.*, p. 59, Pl. LXIX, figs. 1-12, 1887. The *Batrachospermum* form having been found, both in the Alabama material here distributed and in similar material from Florida, developing from a *Chantransia* form identical with the Nantucket material here distributed, the specific name given by Wood to the *Chantransia* has been used for the *Batrachospermum*, which appears to be a species hitherto undescribed. a. *Chantransia* form, Gibbs' Pond, Nantucket, Massachusetts, Aug. 3, 1895. *W. A. Setchell and W. J. V. Osterhout*. b. *Batrachospermum* form, on logs, sticks and stones in Fly Creek, a clear spring-fed creek that empties into Mobile Bay, Alabama. *De A. Saunders*.²

990. *BATRACHOSPERMUM VAGUM* Ag. var. *FLAGELLIFORME* Sirdt. forma **tenuissima**, n. f. A slenderer form than that distributed under No. 188 of this work, but probably the same variety. Outlet of Ox Bow Lake, near Lake Piseco, Adirondack Mountains, Hamilton County, New York, Aug. 24, 1896. *Isaac Holden*.

836. *SCINAIA FURCELLATA* (Turn.) Bivona forma **complanata**, n. f. The frond is flattened throughout, even when quite fresh. The habit resembles that of uncalcified *Galaxaurata obtusata* (Ell. & Sol.) Lamour., but the structure agrees with the typical *S. furcellata*. Possibly the same as the plant described as *Isymenia angusta* J. G. Agardh,

¹ Erroneously printed lat. 55.58, N, in label.

² The name *Batrachospermum macrosporum* having been used by Montagne for a plant from Guiana, *Ann. Sci. Nat., Series 3, Bot., Vol. XIV*, p. 283, 1850, is no longer available for this plant, and **B. australe** is proposed in its place. The characters of the *Batrachospermum* stage may be briefly characterized as follows: color grayish green to gray violet; main branches virgate, with few long and many short branches, the latter at right angles, with acuminate tips; verticils pear-shaped to spherical, rather distant below, very close above; interverticillary filaments few; trichogyne stoutly clavate.

Analecta Algologica, Cont. V. p. 66, 1899. Washed ashore, Indian River Inlet, Florida, April, 1899. *Mrs. G. A. Hall.*

1138. *GELIDIUM CRINALE* (Turn.) J. Ag. forma **luxurians**, n. f. Fronds up to a decimeter long, simple below, but usually much branched pinnately above. Color of the growing plant a warm red brown, which is often retained in drying. On stones at low water mark, Pacific Beach, San Diego County, California, March 8, 1899. *Mrs. E. Snyder.*

1139. *GIGARTINA CANALICULATA* Harv. forma **laxa** n. f. Much less branched than the type, and lacking especially the short dense ramuli; quite distinct in extreme forms, but connected with the type by intermediate forms. Washed ashore, La Jolla, California. *Mrs. E. Snyder.*

1140. *CYSTOCLONIUM PURPURASCENS* (Huds.) Kütz. forma **stellatum**, n. f. Branches beset with stellate tufts of short ramuli, lighter colored than the branches. Floating, South Harpswell, Maine, July 11, 1903.

938. *DELESSERIA QUERCIFOLIA* Bory var. **linearis**, n. var. On stipes of *Lessonia* at extreme low water mark, Minnesota Seaside Station, Vancouver Island, July, 1901. *Miss E. Butler & Miss J. M. Polley.*¹

636. *CHONDRIA TENUISSIMA* (Good. & Woodw.) Ag. forma **Californica**, n. f. Very iridescent when growing; the tips sometimes hooked, the same as in *Hypnea musciformis* (Wulf.) Lamour.; the ramuli more erect than in the usual form, the color darker. On various algae between tide marks, La Jolla, California, Oct. 15, 1898. *Mrs. E. Snyder.*

996. *CHONDRIA DASYPHYLLA* (Woodw.) J. Ag. forma **Floridana**, n. f. Main branches rather stout, flexuous, set sparingly with quite regularly alternate branches, ultimate ramuli long, cylindrical or slightly clavate, base hardly constricted, color pinkish or yellowish red. Washed ashore, Jupiter Inlet, Florida, Sept. 18, 1896. *Mrs. G. A. Hall.*

698. **Callithamnion Halliae**, n. sp. Frond up to 5 cm. high, usually with a percurrent axis, straight below, becoming flexuous near the top, up to .2 mm. in diameter at the base, not corticated, with similar alternate branches; these sometimes bearing a second series; the next series of branches dividing dichotomously, at first at wide angles; the subsequent forkings less and less patent, ultimate divisions

¹ No description was published with this label. It is distinguished from the type by the very narrow fronds, reminding one of forms of *D. alata* (Huds.) Lamour. In Setchell and Gardner, 'Algae of Northwestern America, Univ. of California Publications, Bot., Vol. I, p. 323, the genus *Delesseria*, in the older sense, is divided, and the plant now in question appears as *Schizoneura quercifolia* (Bory) J. Ag. forma **linearis** Collins, n. comb.

of one to several cells, from .01 to .02 mm. diam., not much tapering, end slightly rounded, without terminal hair. Cells throughout the frond usually about 4 times as long as broad, but where the forkings are very dense, 1 to 2 times as long. Cystocarps depressed spherical, not distinctly lobed, single or several together, situated in the forking of a lateral branch, or on the side of a main filament. Antheridia forming tufts on the upper side of the ultimate ramuli, occurring on the same individual as the cystocarps. Tetraspores tripartite, occasionally cruciate, pyriform, sessile on the upper side of the ultimate ramuli, often one on each joint. Color a pale to a deep rose.

This species presents quite a difference in habit, according as the alternate or the dichotomous system of branching is most developed, and as the latter is more or less dense. The two extreme forms resemble respectively *C. Baileyi* Harv. and *C. corymbosum* (Eng. Bot.) Ag.; its nearest affinity would seem to be with *C. corymbosum*. It adheres well to paper. Washed ashore, Key West, Florida. *Mrs. G. A. Hall*.

1148. *PTILOTA PECTINATA* (Gunner) Kjellman forma **tenuis**, n. f. A comparison with the typical *P. pectinata*, distributed as No. 392, P. B.-A., shows this to be a much more delicate form, resembling rather *Plumaria elegans* (Bonnem.) Schmitz in habit. On rocks between tides, San Juan Island, Washington, June 25, 1899. *N. L. Gardner*.

847. *CERAMIUM STRICTUM* (Kütz.) Harv. forma **proliferum**, n. f. Differs from the type by the more abundant lateral branches, by which it approaches *C. diaphanum*. It is perhaps the *C. diaphanum* of Harvey, Nereis Bor.-Am., part 2, p. 215, but not the *C. diaphanum* of Roth, which has not been found on this coast. On sand covered rocks, Bridgeport, Connecticut, July 12, 1891. *Isaac Holden*.

750. *HALYMENIA FLORIDANA* J. Ag. forma **dentata** (Crouan), n. comb. *Gelinaria dentata* Crouan in Mazé et Schramm, Algues de Guadeloupe, 1870. Washed ashore, Indian River Inlet, Florida, May, 1899. *Mrs. G. A. Hall*.

650. *CORALLINA GRACILIS* Lamour. forma **densa**, n. f. The densely appressed branches give this form a quite different appearance from the typical *C. gracilis*, distributed as P. B.-A., No. 399; but there seem to be no distinctive characters sufficient to entitle it to rank as a species. a. On rocks exposed to the waves, Dillon's Beach, Marin County, California, Dec. 11, 1898. b. On exposed rocks, Pyramid Point, Monterey County, California, Jan. 8, 1899. *W. A. Setchell & R. E. Gibbs*.

The following species, discovered by the late Isaac Holden, was distributed under Nos. 1007 and 1163; the description, given with the latter number, is as follows:

1163. **Lyngbya** (**Leibleinia**) **subtilis** Holden n. sp.

"Filaments attached by the middle to other algae; free ends cylindrical or somewhat tapering; trichomes pale green, somewhat torulose, .003-.0045 mm. diam., articulations 1-3 to 1, usually 1-2 diam. long; terminal cell rounded, sheath thin, delicate.

Attached to various marine algae, Bridgeport, Connecticut; and along the coast to Maine. The filaments vary considerably in size; the general habit is not unlike some of the smaller species of *Plectonema*, but no branching has been observed."

MALDEN, MASSACHUSETTS.

A STATION FOR *ASPLENIUM EBENOIDES* IN MASSACHUSETTS.—On the 30th of September, 1905, I drove from Canaan, Connecticut, where I was stopping, to Ashley Falls in Massachusetts. The day was so hot that collecting seemed almost useless. On crossing the Massachusetts line I was relieved, however, to find shade, which at least looked cool. Crumbling abutments reached from the cliff towards the road. The hollows between were filled with greensward and the crevices in the rocks were full of all the lovely things that like limestone crannies. From one to another I hurried and peered like a mortal under a fairy spell. Walking-leaf, ebony and maiden-hair spleenworts, bulblet bladder-fern, blunt-leaved *Woodsia*, mountain *Geranium*, harebells, and at the top rusty *Woodsia* were there and all most daintily set. In the rich soil between the back of the rocks and the river grew huge tufts of Christmas and evergreen wood-fern and on an occasional limestone outcrop small and very intensely colored purple cliff-brakes. I said to myself "Here we have the right soil and an abundance of *Asplenium ebeneum* with *Camptosorus rhizophyllus* elbowing each other; and whether *Asplenium ebenoides* is or is not a hybrid, I would like to hunt every inch of this place for a root of it, if I had the strength and two weeks time." Just then, up over my head on a ledge, a difference in the form of a fern attracted my attention, and after a scramble I actually had found the little plant in question. It was a small root, to be sure, but unmistakable in its identity and within the limits of Massachusetts, where so far

as I have learned *Asplenium ebenoides* has never been recorded before. Very near it was a vigorous plant of *Camptosorus rhizophyllus* on which nearly every frond was a departure from the typical leaf with rounded lobes. One had pinnae as distinct below as in *Asplenium ebenoides* itself, thus looking much as though this individual was a sort of missing link in the history of the interesting spleenwort.—MRS. J. R. SANFORD, Winsted, Connecticut.

THE APETALOUS FORM OF *ARENARIA GROENLANDICA* ON MT. MANSFIELD.—During the second week of June, 1902, I collected on Mt. Mansfield apetalous specimens of *Arenaria groenlandica* Spreng. The season was cold and wet and normal plants of the same species were developing slowly. On looking over the back numbers of my set of RHODORA I found a record relative to apetalous specimens of *A. groenlandica* collected by Mr. Rand in 1888 and others with reduced petals collected by Professor Fernald in 1894, and I intended to report immediately the new station which I had observed, but press of work prevented my doing so. In 1904 I searched again for the form in question but failed to find it. In 1905, however, on July 7th I was more fortunate, finding a colony some inches in diameter growing among the typical plants which were in full bloom. On both occasions the apetalous specimens were collected on the open ridge of the summit of the mountain. Only a few specimens were taken at either time and all were sent to the herbarium of the University of Vermont. The previous note on the apetalous form of this species records its occurrence in Maine only, and suggests that it may be a seasonal development. The finding of the form on Mt. Mansfield in early June not only extends the known range to Vermont but seems to indicate that it is not the result of any reduction or abortion of the normal form after normal flowering.—ELIZABETH B. DAVENPORT, Brattleboro, Vermont.

A NEW VARIETY OF *CAREX INTERIOR*.—During a recent excursion in the St. John Valley of the Josselyn Botanical Society of Maine I was much interested and perplexed by a strange *Carex* which abounded on a wet sandy shore below Fort Kent. The plant was obviously related to *Carex interior* but its slender lance-subulate mostly ascend-

ing perigynia gave it a distinctive appearance which would immediately attract a student familiar with the common *C. interior* of northern New England. Study of the plant shows it to be a very extreme variation of that common species, which, as it ordinarily occurs, has broadly deltoid-ovate wide-spreading perigynia. This peculiar variety in the St. John valley, collected on an excursion of the state botanical society, may appropriately bear the name of John Josselyn, the pioneer botanist of Maine. I therefore propose to call it

CAREX INTERIOR Bailey, var. **Josselynii**, var. nov. Perigyniis lanceolato-subulatis 3 mm. longis 1 mm. latis ascendentibus. MAINE, wet sandy shore of the St. John River, Fort Kent, July 6, 1904 (*M. L. Fernald*).—M. L. FERNALD, Gray Herbarium.

VIOLA NOVAE-ANGLIAE IN THE PENOBSCOT VALLEY.—It is with great pleasure that I am able to record the finding of *Viola novae-angliae* House at Veazie in flower and fruit on June 10 and 23, 1905. Mr. F. M. Billings and I found it growing in crevices of the rocks along "The Cliffs" near the Penobscot River when it was just passing out of bloom at the first date given and later I collected it in fruit and cleistogamous flower. Specimens have been seen by President Ezra Brainerd who verifies my identification of the plant.—ORA W. KNIGHT, Bangor, Maine.

THE THIRD ANNUAL MEETING OF THE BOTANICAL SYMPOSIUM will be held from July 2 to 9, 1906, at Mountain Lodge, Little Moose Lake, Old Forge, N. Y. Through the courtesy of the members of the Adirondack League Club the privilege of occupying the Club House for one week is extended to the members of the Conference. Tickets should be bought to Fulton Chain Station on the Adirondack Division of N. Y. C. & H. R. R. Single fare from New York City \$6.46. Board \$2.00 to \$3.00 a day. Stages will meet the party at Fulton Chain Station. Botanists intending to attend the Symposium are requested to notify Mr. Joseph Crawford, Secretary, 2824 Frankford Avenue, Philadelphia, Pa. A cordial invitation is extended to New England botanists to take part in this meeting.

THE JOSSELYN BOTANICAL SOCIETY OF MAINE will meet this year, July 3-6, at Rowe Ponds Camps, Pleasant Ridge Plantation. These camps are in the midst of the Somerset County forests, 10½ miles northwest of Bingham, which is the nearest village. Woods, ponds and streams are all around, and there is splendid opportunity for collecting and studying the characteristic plants of the region. It is expected that a speaker on forestry will give the principal address. Although this is a Maine society, it has numerous members in other States. Any botanist who wishes to explore this section of Maine during the first week in July, will be heartily welcomed by the Josselyn Society. A descriptive circular giving rates and further details will be sent, on application to the secretary, Mr. A. H. Norton, Portland Society of Natural History, Portland, Maine.

Vol. 8, no. 89, including pages 81 to 100, was issued 12 May, 1906.

BOTANICAL PUBLICATIONS

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